



RADIO FOR AGRICULTURAL EXTENSION

END OF PROJECT REPORT

2017 - 2020

Table of contents

1. Introduction.....	3
2. Agriculture extension via radio	3
2.1. New radio stations	3
2.2. Increase in radio stations' reach	4
2.3. Radio programme sponsorship.....	4
2.4. Awards.....	4
3. Extension support	4
3.1. Social media	5
3.2. Farmers' Field Day.....	5
3.3. Radio listening groups.....	5
3.4. TV programme	6
4. Training and workshops	6
5. Field visits.....	8
6. Effect of COVID-19 on radio programming, extension support and farmers	12
7. Success stories	14
8. Lessons learned.....	18
9. Challenges.....	18
10. Conclusion	20
Appendix I.....	21
Appendix II	22
Appendix III.....	23
Appendix IV.....	Error! Bookmark not defined.

1. Introduction

Kilimo Media International's partnership with Syngenta Foundation for Sustainable Agriculture began in 2015, on a project aimed at providing agricultural extension services to farmers through local language radio stations. The aim was to increase the agricultural productivity of farmers by enhancing their access to agricultural information through radio, with the support of the local extension service providers. The first phase of the project which ran from 2015 to 2017 was implemented in five counties; Marsabit, Garissa, West Pokot, Samburu and Isiolo. The second phase, which is the focus of this report, was implemented in Nyeri, Kitui, Kajiado, Meru and Marsabit counties from 2017 to 2020.

In the two phases, the project invested in hands-on training for radio production personnel and extension service officers, including on-site monitoring and support meetings to ensure the observance of quality and soundness of content delivery. Kilimo Media is grateful to Syngenta Foundation for Sustainable Agriculture for providing support to this project. The project has vastly increased the reach of extension services in remote areas, with farmers adopting various farming practices discussed in the programmes. This would not have been possible without the support of departments of Agriculture, Livestock and Fisheries in the five counties.

This report provides an overview of the progress and achievements made by radio stations in airing agricultural programmes and in the provision of extension support by agricultural extension officers from 2017 to 2020. The report also covers training and workshops held as well as field visits made by KiMI staff members. The effect of COVID-19 on the use of radio for agriculture extension is also discussed. The last section of the report outlines some success stories, lessons learned, and challenges encountered by those implementing the project in the respective counties.

2. Agriculture extension via radio

Kilimo Media provided support to five radio stations namely Rware FM (Nyeri), Syokimau FM (Kitui), Thiiri FM (Meru County), Bus Radio (Kajiado), and Radio Jangwani (Marsabit). The achievements in regard to radio stations in the second phase of the project are related to increase in the number of radio stations and stations' reach, sponsorship as well as an award as reported in this section.

2.1. New radio stations

In 2020, KiMI incorporated into the project two more radio stations, Wikwatyo FM based in Kitui County and IBSE FM based in Marsabit County (Appendix I). Wikwatyo FM had no previous experience in agricultural programming and is one of the stations that had requested KiMI to bring it on board the project. As KiMI is already working with Syokimau FM also based in Kitui, the request by Wikwatyo FM to extend services to the station was received with open arms especially because the extension officer was ready to give the necessary support to the new station. The station also boasts of a considerable following.

IBSE FM, a new radio station joined the project as an alternative for the dynamic extension officer in the county when he could no longer travel to Radio Jangwani (located in the outskirts of the town) due to insecurity which led to curfew on night travel imposed by the government. However, Radio Jangwani continued to air the radio programmes albeit at scaled down level, with a focus on repeats and pre-recorded programmes.

2.2. Increase in radio stations' reach

In January 2020, Bus Radio based in Kajiado County expanded the station's reach by erecting a 30-meter mast. This has increased the stations coverage from a 30kms to 70kms radius from Kajiado town. This means that it is now reaching about 80,000 more farmers including those in radio listening groups that were previously not covered by the station's signal, bringing the total to 200,000 farmers. This new reach was established following an audience survey conducted by a tech company called Pywvi. The increased reach has enabled the station to diversify its programming and hire more personnel and interns, thus their request to KiMI to carry out an inhouse training for the new staff.

2.3. Radio programme sponsorship

Agriculture extension officers attached to radio stations assisted the stations to get sponsorship for the agricultural programmes they aired. The extension team attached to Thiiri FM reported to have secured sponsorship for the radio programme from private companies, in particular Bayer, DigiFarm and Agrochem, in 2019. The sponsors also supported the agricultural officers to organise farmer field days at the local level.

KiMI programmes running on Syokimau FM covering cotton, identified as a priority crop in Kitui county, and mango farming generated a lot of interest from farmers. As a result, the department of agriculture in Kitui County requested the extension officer attached to Syokimau FM, Mr. Titus Masila, to produce and air programmes that promote cotton farming. In the same county, another radio station Thome FM approached the Chief Officer in the Ministry of Agriculture to assign an extension officer to cover six shows on the mango value chain with the aim of improving mango productivity and profitability in Kitui County, a mango growing area. The programmes generated a lot of interest especially to farmers who had previously not received information covering mango production. Following the high demand for this information, KiMI produced a series of programmes covering the topic to be listened to by radio listening groups in Kitui.

Bus Radio reported partnering with organizations such as Farm Radio International, Neighbours Initiative Alliance (NIA) and the Media Council of Kenya, in 2020. These organizations have supported the stations by providing grants for programmes covering environmental protection and the effect of COVID 19 on pastoralist communities.

2.4. Awards

In 2019, Bus Radio was awarded a certificate of recognition for radio listenership during the KUZA awards hosted by the Communication Authority of Kenya. The award seeks to recognize excellence in broadcasting in Kenya. Bus Radio was second runners up in the Regional Radio Broadcaster Award category that recognizes radio stations that keep listeners informed on regional issues and engaged in conversations that lead to behavior change, in the South Rift region of Kenya. According to Bus Radio, the agriculture programme was top on the list of programmes which earned them the award.

3. Extension support

Agriculture extension officers provided extension support to all radio stations in the KiMI project (Table 1). This support has translated to sponsorship of radio programmes as discussed in section 2.3 and additional advertisements for agro-inputs, as well as mobilization of farmers for activities such as field days, meetings, soil and water conservation, and cattle and poultry vaccination programmes. For example, Wikwatyo FM is in collaboration with the Kitui County Department of Agriculture,

Livestock and Fisheries to run weekly programmes on weather information, crop and animal husbandry from July to December 2020; while seven potato cooperatives were formed in Meru county in August 2018, as a result of intensive mobilization through the radio programme that is aired on Thiiri FM. Other than featuring as experts on the agriculture programmes on the radio, the extension officers provided extension support to farmers via other platforms such as social media, farmer field days, radio listening groups and television.

Table 1: Number of extension officers and radio station staff by gender 2017-2020

Radio station		No. of extension officers						Total 2017- 2020	No. of radio station staff						Total 2017- 2020
		2017- 2018		2018- 2019		2019- 2020			2017- 2018		2018- 2019		2019- 2020		
		M	F	M	F	M	F		M	F	M	F	M	F	
1	Bus Radio	1	0	1	0	1	0	3	2	0	2	1	2	6	13
2	Radio Jangwani	1	0	1	0	1	0	3	1	0	1	0	1	0	3
3	Thiiri FM	3	0	8	0	8	0	19	1	2	1	2	1	2	9
4	Rware FM	1	0	1	1	1	0	4	1	1	1	0	1	0	4
5	Syokimau FM	2	0	2	0	4	0	8	2	1	2	0	1	0	6
	Sub-total	8	0	13	1	15	0	37	7	4	7	3	6	8	35
	Total	8		14		15		37	11		10		14		35

3.1. Social media

Thiiri FM began a WhatsApp group in 2018 to provide extension support to farmers who listen to the agricultural programme. The group provides a forum where listeners continue their discussions on farming and share farming ideas, after listening to the radio programme. The number of listeners joining the group grew from 50 in 2018 to over 600 in 2020 and continues to grow. Programmes at the radio stations are usually developed to include responses to queries raised by farmers in the group.

3.2. Farmers' Field Day

The agriculture extension officer who supports Rware FM in Nyeri and doubles up as the Farm Manager of Wambugu farm in Nyeri, hosted a Farmers' Field Day at the end of July 2019. The agricultural radio programme was one of the avenues of mobilizing farmers to attend the field day. The event was broadcast on Rware FM and some stakeholders paid for advertisements on the station. The manager reported that farmers were excited to finally meet him, as previous interaction had been through the radio programme. They commended him for the suitable content in the radio programme. The field day attracted over 30,000 farmers from all over Kenya – the highest number, which the extension officer attributed to the publicity that he gave during the weekly radio programme and regular presenter mentions at Rware FM.

3.3. Radio listening groups

The radio stations, with support from KiMI, promoted the establishment of radio listening groups in 2018 (Appendix II). The respective extension officers in the counties were encouraged to form the groups as one of the ways of enhancing two-way communication between the radio stations and farmers. The groups comprise already existing farmer groups whose members now set aside some time to listen to radio programmes as an added activity during their monthly meetings. It is evident that this

activity is beneficial to farmers in attendance who listen to the programmes, sometimes in the presence of an extension officer. Farmers have the opportunity to ask questions in their local language, exchange ideas and in some instances practically learn how to implement the agricultural practices covered in the radio programmes. This helps farmers to better retain the farming tips learned.

3.4. TV programme

In August 2019, Thiiri FM developed and aired a documentary on greenhouse fish farming. The documentary shooting, editing and airing was sponsored by Thiiri FM and Meru TV. The documentary created a big following by viewers who requested for documentaries covering other topics. Thiiri FM continues to develop and air the complementary TV programmes. The radio and TV producers record audio and audio-visual material for both their radio and TV programmes whenever they are scheduled to go to the field. Programmes broadcasted on radio and TV in 2020 covered kitchen gardens and growing horticultural crops such as tomatoes, green paper, and onions. One of the TV programmes featured Mr. Mathew Muriungi a farmer from Tigania West in Meru county who grows orange fleshed sweet potato, a popular variety due to its nutritional value. The programmes also featured Mr. Ntoribi Etirikia, a farmer in Tigania East who sought the assistance of the extension officer in Meru County, Mr. Joseph Mugambi to take soil samples from his farm for testing. The results of the test were useful in helping him decide which crop to grow under irrigation.

4. Training and workshops

KALRO weather advisory workshops

KiMI established a partnership with the Kenya Agricultural and Livestock Research Organization (KALRO) on the provision of weather information to farmers, via the Climate Change Adaptation through ICTs (CHAI) project in 2019. KALRO convened two trainings, one in February and the other in September 2020 whose aim was the development and dissemination of agricultural weather advisories for Kitui, Machakos and Makueni counties for the March-April-May and October-November-December seasons respectively. KiMI took the participants through a session on radio for agricultural extension.



Group discussions at KALRO meetings with radio staff, in Kitui and Naivasha respectively

The radio stations in attendance for the two trainings were Wikwatyo FM, Syokimau FM, Mwatu FM of the Kenya Broadcasting Corporation, and Athiani FM, all based in the region. KiMI had invited the

additional stations for them to augment the programming on Syokimau FM in reaching farmers with the useful information on weather and climate change, to help in better planning for their farming activities. The sessions were also attended by representatives from the Kenya Meteorological Department and agriculture extension officers from three counties of the eastern region - Kitui, Machakos, and Makueni. The radio stations developed a schedule for programmes on agro-advisories with the weather and agriculture experts for the specific season.

Capacity building of radio station staff and interns

On-site training on production of agriculture programmes was conducted separately in Kitui and Kajiado for Wikwatyo FM, the new station on board, and Bus Radio. The trainings were requested by the station managers in March and August 2020 respectively.



Radio trainer Toepista Nabusoba gives hands on training to Pastor Silas, the station manager of Wikwatyo FM and hands over a recorder in support of their field recordings

Kilimo Media held a one-day training in July 2020 for six fresh college graduates at Bus Radio in Kajiado county. This was the graduands first hands-on experience in journalism. The training was aimed at sharpening their skills in order to enable them contribute to the station meaningfully. Victor Juma, the station manager, had requested KiMI to conduct the one-day crash training which focused on radio techniques, interviews, radio formats, writing for radio, and the Zara radio software for automation. The trainees who were eager to learn expressed that the training was too short. KiMI promised to organize more trainings covering specific areas requested by the station within the year.

Presentation at the 5th International Food Security Symposium at the University of Illinois in April 2019

The KiMI Monitoring & Evaluation and Climate Change Communication Specialist, Dr Fiona Mwaniki, made a presentation at the 5th International Food Security Symposium held at the University of Illinois in Urbana, Champaign - USA. The symposium, which was held between 2 to 3 April 2019, was hosted by AgReach which is headquartered at the College of Agricultural, Consumer and Environmental Sciences (ACES). The presentation titled *Agricultural Extension by Radio: Experiences from Semi-Arid Kenya* was delivered as part of a panel on the section on information and communication technologies, to strengthen institutions for food security. The presentation elicited questions from the audience including use of video for agriculture extension and mentorship of radio stations. KiMI is grateful to Syngenta Foundation for Sustainable Agriculture for supporting Fiona to attend the conference.

Project review meeting held at the Kitui Agriculture Training Center

The meeting, which was convened from 2 to 5 October 2018, was in response to requests made by the Project team. The meeting brought together agricultural programme staff from the five participating radio stations and their supporting agriculture extension officers. The meeting was officially opened by Mr Francis Kitoo, the director of agriculture who had been sent to represent the Chief Officer for Agriculture in Kitui County. The objectives of the meeting were to share experiences and lessons learnt as well as challenges encountered, and discuss sustainability of the radio programming model at the radio stations. During the meeting the participants produced a live programme on the weekly agriculture hour on Syokimau FM between 8.00 to 9.00pm. The meeting ended with awards being given to the best Station in terms of consistency in implementing the radio for agriculture model and best extension team (most supportive to the radio programme). Participants were issued with a score sheet to award points on the two categories, based on reports presented earlier by each station team. Syokimau FM was voted best radio station, while the Meru extension team was voted the most supportive.

Radio producers and extension officers training held at the Wambugu Agricultural Training Center in Nyeri County

The three-day training (22 to 24 January 2018) was the inaugural activity for the second phase of the radio for agriculture project. It brought together 20 participants – radio staff from participating stations and extension officers from Kitui, Meru, Nyeri, Makueni and Marsabit counties. The training was officially opened by Ms Ruth Mwangi - Chief Officer for Agriculture in Nyeri County and attended by the Principal of Wambugu Agricultural Training Centre, which was the venue. The main objective of the training was to introduce participants to the use of radio for agriculture, for them to appreciate the use of radio to better reach farmers. The participants were specifically trained on programme production and formats, better interviewing skills, scripting and editing.

Participants formed production teams (radio station personnel and agriculture extension officers from the same county) and developed 13-week programming schedules for their counties (February to April) that were aligned to the agricultural calendar. The roles of the extension officers and producers for better collaboration and their sources of information for their programmes were also identified. The workshop ended with the participants jointly producing a magazine and drama programmes which were aired during the live show between 8.00 to 9.00 pm, presented by the team on Rware FM.

5. Field visits

Use of agro-advisory information

In March 2020, KiMI staff together with officers from the KALRO CHAI project met with farmer groups in Kitoo and Mwingi in Kitui county. These farmer groups make use of agro-weather advisories aired on radio under the project to plan their farming activities. Mr. and Mrs Kwinga who belong to Kikungu group previously harvested less than five bags of green grams. They reported to have harvested 20 bags after heeding and incorporating the weather advisories into growing of green grams. The seasonal advisory aired in the programmes stated that the onset of the March-April-May season would be between the second and third week of March and would cease between the third and fourth week of May 2020. The rainfall was forecasted to be well distributed in time and space. Mr. Titus Masila the Kitui agriculture extension officer reports that farmers are listening to weather reports and taking them seriously.



KALRO and KiMI staff meet with Kikungu and Tothii Emwe group members in Kitui

Another group recently recruited in the groups KARLO is working with in the CHAI project “*Tothii Emwe*” (Lets walk together) is composed of couples walking together in development. The group members reported of the benefits of farming together as couples such as unity in the family and reduced cases of family disputes that sometimes end up in violence or suicide.

Visit to Rware FM (Nyeri County) and Ministry of Agriculture office in Meru county

In January 2019, KiMI team travelled to Nyeri and Meru counties to meet with the county agriculture officials to seek their support in the production of the radio programmes by the stations in their respective counties. The visit was in line with what had been agreed upon at the project review meeting held at the Kitui Farmers’ Training Center at the end of 2018 with all the production teams from the five counties (Meru, Nyeri, Kajiado, Kitui and Marsabit) in attendance.

Nyeri county visit

KiMI visited the then minister for Agriculture Mr David Kinyua and the Chief Officer Ms Ruth Mwangi at the county offices. The minister was encouraged by the partnership between the Nyeri Department of Agriculture, Livestock and Fisheries and Rware FM. He pledged to support the extension officers to continue with the agriculture programme on Rware FM. Unfortunately, the minister was due to vacate office in a week’s time. He promised to hand over to the next minister, and to seek his support to ensure that the radio for agricultural programming becomes sustainable in the county. KiMI also met with Rware FM for a discussion on the successes and challenges of production and airing the agriculture programme with the backing of the extension officer Moses Gichohi (Manager, Wambugu Agriculture Training Center).



The extension officer in Nyeri gives advice to an onion farmer

Meru county visit

The team later proceeded to Meru County for a meeting with officials at the Department of Agriculture. The minister commended Kilimo Media for the follow up on the progress of the radio programmes and for closely working with the agricultural officers. She repeated her promise to facilitate the extension officers in the near future to continue with the programmes at Rware FM. The KiMI team also paid Thiiri FM in Meru County a visit. Thiiri continues to work together with the agriculture extension officer, Joseph Mugambi, who reported that he had secured support from private companies to provide resources for the extension officers to attend the radio programme on selected topics of interest.

/



KiMI team with outgoing minister for Agriculture David Kinyua (right) & Chief Officer Ruth Mwangi (left) in Nyeri County



The Meru agriculture team share the progress of the radio programmes at Thiiri FM with Pamela Mburia from KiMI

Extension officers attached to the station were happy that the radio has made it easier for them to pass messages to farmers. It was noted that the change in the office holders in the counties slowed down following up on their support. During the reporting period, KiMI sent minimal support and tried to encourage the radio and extension staff to own the radio programmes and ensure they are broadcast even when KiMI ceases to support them financially. The production teams have heavily relied on KiMI for support to travel to the field and radio stations.

Visit to Rware FM and Thiiri FM with Paul Castle

A follow up visit to Nyeri and Meru counties was made in the company of Paul Castle between 22 and 24 July 2019.

Nyeri county visit

The trip to Nyeri included a courtesy call on the Minister for Agriculture, Livestock and Fisheries at the county offices. The new minister James Wachihi Muturi (who replaced David Kinyua) emphasized the importance of radio broadcasts in local languages, as “the languages serve local farmers, who appreciate information in the language of the heart.” He noted that few farmers had access to television and that radio had a wider reach. This he said was beneficial because the government has no capacity to deliver extension services to all farmers. The minister said that the county had 340 extension officers who were expected to cover 700,000 farmers.



Syngenta Foundation, KiMI and Rware FM team with the new Minister for Agriculture in Meru County (in tie)

The team later visited onion farmers in Kamahuhia who are avid listeners of the programme on Rware FM. At Wambugu Farm preparations were in top gear for the Farmers Field Day that was to be held later in the week (refer to section 3.2). The farm manager Moses Gichohi was in charge of the preparations for the event, which he expected to be attended by some 30,000 farmers. The programme on Rware FM during the week prior to the Farmers Field Day focused on the importance of Farmers Field Days. The station manager at Rware FM reported that the station’s reach had expanded and now covered two additional counties and the wider Mt. Kenya regions.

Meru County visit

The team later visited Meru County on 23rd July, 2019. Thiiri FM reaches farmers in Meru and neighboring counties of Laikipia, and Isiolo. The visit began with a meeting with the extension officer

Joseph Mugambi, and Paul Mugwika the Crops Officer. The extension team leader at Thiiri FM, Mr. Mugambi reported that he continued to induct and coordinate his colleagues to be interviewed on the agriculture programme. He initially had three extension officers supporting the radio programme, a number that later increased to eight as a result of interest from other officers. Having been trained by KiMI and now confident in interview techniques, he was resourceful in giving his colleagues useful tips on how to present themselves on radio. The programme on Thiiri has two presenters who are both female. This, it was noted, was a good development as the two support and complement each other. They both have an interest in the programme and have become quite popular among listeners. Kawira was trained on-site by KiMI and she was helpful in getting her colleague to master the art of good programme production and presentation.

The last day of the visit by the Syngenta Foundation and Kilimo Media started at the office of Ms. Caroline Kagwiria, the new minister for Agriculture. She had recently replaced Prof. Karwitha, who had been transferred to the Environment ministry. The minister noted the radio has been very effective in reaching out to farmers, citing one major success where the radio was instrumental in getting farmers to terrace some 20km of farmland in response to requests for information from farmers. The agricultural officers present reported that Thiiri had expanded its reach and farmers from neighbouring counties were now calling the radio stations for information during the live broadcasts. The minister noted that 90% of farmers do their farming the wrong way, because they lack information. For this reason, she emphasized the crucial role of radio not only for aiding in attaining food security but also for economic empowerment of farmers.



Ms. Kagwiria, the minister for agriculture (in red) with extension officers, Paul and Harriet from SFSA and Pamela from KiMI

The last stop for the team was in Kiagu Ward of Imenti Central sub-county. Susan Ngugi, an avid listener of Thiiri FM, was eager to receive the visitors and to show off her millet crop which was almost ready for harvest

6. Effect of COVID-19 on radio programming, extension support and farmers

In March 2020, the corona virus was declared a global pandemic by the World Health Organization. The agriculture supply chain has been affected by the pandemic by disrupting the transportation of farm inputs and produce as a result of restrictions on movement and border closures, causing an

increase in food prices. There was also reduced demand for agricultural produce following the closure of establishments in the food service industry such as restaurants and schools. Farmers are also suffering from diminishing sales of their farm produce due to reduced purchasing power of consumers as a result of loss of jobs and other sources of income.

Since the reporting of the first cases in Kenya, the government has been working to put in place measures to control the spread of the pandemic and to support those infected by the virus. Partnering radio stations and extension officers from the Ministry of Agriculture, Livestock and Fisheries have responded in various ways in mitigation reported below. The virus has had both negative and positive effects on radio stations, extension agents and farmers, as discussed next.

Radio stations

Radio stations reported that the nationwide curfew, instituted by the Kenyan government due to COVID-19, has restricted movement of radio producers to conduct interviews with farmers and experts in locations away from the radio station. Most of the radio programmes are aired in the evenings from 8.00pm just when the curfew starts. Consequently, some radio stations were unable to host experts during live shows. This necessitated radio station producers to conduct telephone interviews (aired live or recorded) with experts, often resulting in low quality interviews due to connectivity problems. Radio stations also reported that COVID-19 has led to a drop-in advertising revenue leading to staff layoffs. Consequently, the limited staff capacity took a toll on programming, agriculture included. For the stations that rely on generator to power their studio equipment during the occasional power failure, reduced revenues meant that they were not able to fuel their generators, thus reducing the number of hours the station was on air. In some instances, this affected agricultural programming.

Kilimo Media supported partnering radio stations by producing programmes covering farming during COVID-19 times as well as prevention and stigmatization in various languages. This was necessitated by the reduced number of staff to produce the programmes as a result of layoffs due to COVID-19. These programmes were shared with the stations for broadcast. The radio stations interspersed the programmes within their broadcast schedules and requested for more.

Extension officers

COVID-19 created a challenge for extension officers' access to farmers in the first quarter due to the government regulations on the curfew which started at 7.00pm to 5.00am. The curfew hours were revised on 10 November 2020 to start from 10.00pm to 4.00am. Conducting Farmer Field Schools (FFS) was also a challenge due to COVID-19 social distancing regulations which have resulted in the coming together of fewer farmers to be trained on various farming practices. Extension officers reported that many farmers did not have access to masks, and hand washing stations had not been placed at the venues for these activities. This led to the cancellation of many FFS and farmer visits by extension officers.

Radio listening groups were affected by COVID-19 containment measures as the main source of information and interaction was limited to radio and the telephone as extension officers' movements became restricted by the guidelines from the ministry of agriculture.

Farmers

For the pastoralist communities in Marsabit and Kajiado counties a ban on inter-county movement, the closure of live animal markets coupled with the closure of livestock export destination markets such as the Middle East due to the COVID-19 pandemic negatively affected their livelihoods. Also, due to

COVID-19, some NGOs that provided farmers with much-needed extension support have had to cease operation.

COVID-19 has had some positive effects such as increased radio listenership, increased agriculture production and increased use of ICT for agriculture extension, as discussed below.

Increased radio listenership

The participating radio stations reported an increase in listenership, which they attributed to more people staying at home due to COVID-19. Kilimo Media developed COVID-19 messages relevant to farming communities that were syndicated to the radio stations it is working with. Spot messages on COVID 19 were developed in Kiswahili and the vernacular languages Kamba, Meru, Kikuyu, Maasai, and Rendille. KiMI also facilitated the stations to develop programmes during COVID 19 in their counties.

Increased agriculture production

The Ministry of Agriculture has developed COVID-19 protocols and guidelines that sector actors in the agri-food supply chain should adhere to by practicing proper sanitation and social distancing. More agriculture activity was reasised, mainly because some people who lost their jobs as a result of COVID- 19 relocated to the rural areas and engaged in farming. Young people who were on a long indefinite holiday because of closure of schools began to grow vegetables for sale leading to a glut in the vegetable market in Kitui, as Benedict Mathitu the extension officer reported. He added that farmers were relieved as they had their children helping out in the farms due to the long holiday.

Enhanced use of ICT for extension

The COVID-19 situation has necessitated both radio stations and agriculture extension officers to think innovatively in reaching farmers. The use of ICTs and social media platforms such as WhatsApp groups and Facebook are becoming the norm for radio stations that have not been using them. Extension service providers are looking into increasing their use of online extension services such as conducting e-trainings with farmers and developing e-learning resources such as recorded videos to share with farmers via smart phones.

7. Success stories

i. Marsabit county

Radio programming during COVID-19 times

When it became challenging to go to Radio Jangwani for the agriculture programme aired between 8.00pm and 9.00pm, Duba Nura the agriculture extension officer was invited by other recently established radio stations airing agriculture content. These are IBSE FM and BIFTU FM which are located in the town center, as opposed to Radio Jangwani which is located in the outskirts of Marsabit town. Mr. Nura navigates across the three radio stations providing the much-needed agriculture information to farmers. He has created a brand for himself in doing so, by having the same name and jingle/signature tune for the radio programme across the three stations.

Radio listening groups

Two radio listening groups which had been following the radio programmes set up vegetable farms after listening to a programme that covered the topic. One of them is a women group called Kayo Kubi women group in Dirib location composed of 37 members. This group mainly grows kales which are in

high demand in Marsabit. They irrigate their heavily mulched kales when there are no rains and have recently ventured into growing tomatoes. Mr. Duba connected the group to World Food Programme who provided them with a water tank and farm inputs for their vegetable farm.



Some members of Kayo Kubi women group during session in nursery establishment

The other group, composed of 40 members, is Jaribu Kazi, based in Qilta sub location. It is a mixed gender group which grows kales, tomatoes, and green pepper. Mr. Duba connected the group to an organization called Pasida which also provided the group with farm inputs. COVID-19 safety measures are observed by the extension officer when he visits the groups every two weeks, meeting only a few members at a time. The group members on the other hand also work in shifts of six on a daily basis to avoid crowding.

ii. Meru county

Sweet potato enterprise in Meru County

Mr. Muringi, a retired banker in Tigania West in Meru County, ventured into orange fleshed sweet potato farming after hearing about the enterprise over the radio on Thiiri FM in 2019. Extension officers from the Ministry of Agriculture provided information on how to grow sweet potatoes and where to source certified vines. He has been successful in his venture where he harvested about 7000kgs of sweet potatoes from his one-acre farm which he sold for Ksh 360,000. Mr. Muringi had never made so much money from a farming activity.

Kitchen gardens

Another farmer from the same region who is an avid listener of Thiiri FM, listened to a programme about kitchen gardens aired on the radio station. Mr Isaiah Naibocha carefully followed the instructions on the establishment of a kitchen garden given by the extension officer. He grows kales and spinach and the vegetables did so well that he thought his fellow villagers would also benefit from the same initiative. His success made it an easy task to organize them to contribute towards digging a borehole that would provide a reliable source of water for the kitchen gardens. Ntirutu village has benefited from

this initiative by having a wider variety of vegetables for improved household nutrition and improved livelihoods from the sale of the vegetables.



Tomatoes growing in one of the farmers' fields who joined the vegetable growing initiative in Ntirutu village

iii. Kitui County

Teacher turned onion farmer

Jonathan Mbuvi is a primary school teacher who in May 2020 found himself at home after the closure of schools due to COVID-19. After listening to a radio programme by Benedict Mathitu, extension officer on Wikwatyo FM the new radio station partnering with KiMI, and having nothing much to do he considered the idea of starting onion farming. Mr. Mbuvi requested to meet Mr. Mathitu for further advice. The extension officer gave his idea impetus and linked him up with another expert from Greenlife, an agrochemicals, seeds and farm equipment's company, who advised him on the type of onion seed to plant. The expert also assisted Mr. Mbuvi in establishing an onion nursery on his one-acre farm. Benedict and the expert from Greenlife advised the teacher every step of the way, enabling him to grow the onions correct way. He was able to purchase and install irrigation equipment for the onions, carry out proper land preparation for transplanting, apply the required chemicals and herbicides for his onions, as well as use of fertilizer as required. Mr. Mbuvi harvested 10 tons of onions from his one-acre farm and has stored the crop at home waiting for the prices to stabilize.



Mr. Mbuvi's onion farm

Onion farming is profitable if a farmer follows instructions by the agronomists. However, Mr. Mbuvi adds that it is a costly affair and labour intensive. This venture cost him Kshs. 200,000. He expects to make a profit of Kshs. 300,000 if he sells the crop at Kshs.50 per kilo. He says a farmer must have the finances needed to make the venture a success as well as be patient and willing to follow the advice given by experts. His neighbours who followed in his footsteps and decided to also grow onions failed because they did not use fertilizer as they believed their land is fertile and they did not buy some farm inputs as they found them too expensive.

Mr. Mbuvi concludes by stating that the stay-at-home situation occasioned by the Covid-19 pandemic has given him another perspective to life. He says “There are other avenues of making a living without depending so much on a monthly salary”. Mr. Mathitu the extension officer visited his farm and was challenged to start growing onions (teacher learning from student!). Mr. Mbuvi is a young man with a wife and two small children. He has been recently posted to Makueni county and plans to move with his irrigation equipment in order to continue farming on leased land.

iv. Kajiado county

The Joy of Women groups

“Belonging to the women group is important, it gives a woman independence, we are able to make decisions without consulting our husbands.” Lena Kores belongs to Olusuyan self-help group which was formed in 2012 with the help of the ministry of agriculture. When the group grew too big they formed group B which is mainly for young women, their daughters, and daughters in law. Mrs. Margaret Wapansarkul the chair of Group A introduced the group to the KiMI team who had accompanied James Wachira the livestock officer in Kajiado county who had come to train them on poultry farming in 2019. When the Olusuyan self-help group decided to diversify to chicken rearing they were referred to James Wachira the livestock officer in Kajiado to train them on techniques of chicken rearing.



m

Mr. Wachira covered topics such as housing, feeds, diseases, and record keeping. The training session ended with a Q&A session, where Mr. Wachira responded to questions covering incubators, how many eggs free range and confined chicken can lay in a year and the longevity of eggs storage. One of the members in the group was anxious to have the livestock officer visit her poultry project which was not far from the meeting place.

8. Lessons learned

Collaboration is an important element in sustaining the radio programmes and enriching content. Through collaboration, the scope of radio programme topics has widened to cover subjects such as weather advisories. Kilimo Media's partnership with KALRO in the Climate Change Adaptation through ICTs (CHAI) project has enabled radio stations in Kitui to provide accurate and timely weather advisories to farmers in their local language. In addition, radio station staff invited to the joint workshop by KALRO, the Meteorological Department and KiMI to develop the weather advisories reported that they now have a better understanding of the weather information and that they have been empowered to engage experts they interview from an informed perspective making the information more comprehensive and effective for the farmer.

KiMI's Partnership with the Ministry of Agriculture led to the sponsorship of radio programmes. For example, some of the programmes aired on Thiiri FM in Meru County and Syokimau FM in Kitui County were possible through the support of the respective departments of agriculture in the two counties. The partnership has also resulted in easy access to extension officers covering various agricultural sectors. For example, the cordial relationship between Ministry of Agriculture in Kitui County and Syokimau FM has facilitated the provision of extension officers as experts on the show, including the Minister of Agriculture.

COVID-19 amplified the need for radio stations and extension officers to move from doing business as usual and to step out of their comfort zones in radio programme production and extension. The radio stations and extension officers have been forced to come up with innovative methods of reaching farmers during the pandemic. The airing of live shows which was the norm for all stations due to their low production cost was seriously affected by the curfew imposed by the government. The stations turned more to developing and airing pre-recorded programmes despite their higher cost of production compared to live shows. Experts for the shows were recorded via telephone as opposed to face-to-face interviews. Use of social media platforms and TV by extension officers to reach farmers was also on the increase.

9. Challenges

All the six radio stations reported positive progress with the radio for agriculture extension model. Despite the limited financial support to the stations and COVID-19 in 2020, which curtailed the frequency of travel to the field and the number of experts going for the live programmes, all stations continue to broadcast the radio programs. Challenges experienced by radio stations and extension officers are outlined below.

Frequent reshuffling of Ministers of Agriculture, Livestock and Fisheries

The Ministers of Agriculture in Nyeri, Marsabit and Kajiado county left their positions to pursue other interests in 2019, while in Meru County, the minister was transferred to another ministry. This has meant that KiMI together with the respective radio stations have had to re-engage with the new ministers who are not familiar with the radio for agriculture extension model. This puts to risk the sustainability of the project as the new officers taking over office are not conversant with KiMI's model of radio for agriculture extension.

Environmental factors

The high rain fall experienced throughout Kenya in the first months of 2020 was a hindrance to delivery of services to farmers, rendering many roads impassable, and thereby curtailing movement for the extension officers. Other challenges included destruction of crops by heavy rains, the fall army

worm, desert locust invasion and drought conditions that had a negative effect on agricultural productivity.

COVID-19

The Ministry of Agriculture advised their extension staff to minimize movement and contact with farmers in the first months of the COVID-19 pandemic. This, coupled with the curfew imposed by the government, meant that they heavily cut down on their face-to-face extension support to farmers and visits to radio stations for the live shows. Some stations temporarily suspended live shows while others resorted to shorter programmes which were not as comprehensive as the one-hour live programmes they aired before the COVID-19 restrictions. Radio stations also reduced the number of presenters for the programmes to one. This caused a challenge of airing of radio programmes when a presenter was unavailable. KiMI staff also reduced travel to radio stations and to the field as a result of the pandemic.

Insecurity

Insecurity in Marsabit county which begun around 2018 deteriorated immensely in 2020 affecting the movement of people including extension officers. The extension officer attached to Radio Jangwani was unable to travel to Jangwani FM for the live shows which are aired at night from 8.00pm to 9.00pm.

Staff turn over

Radio Jangwani reported that their radio presenter who hosted the agriculture programme left the station. This presenter had attended two of KiMI's trainings and had grasped the concept well. The station has since replaced the presenter. Bus Radio reported a challenge of reduced extension support as the extension officer attached to the radio station went on study leave and is not often available for the programme. They are filling in the gap by airing programmes sponsored by agricultural organizations as well as hosting other extension officers, who are not readily available. Another challenge they report is language barrier. The radio programmes are mainly in Kimasai language, hence the need for an extension officer who is a native speaker of the language, yet they are hard to come by in the county.

Rware FM has recorded a high turnover of personnel, many of them being radio presenters for the programme. This challenge has been mitigated by the fact that the programme has been consistently supported by Mr. Gichohi who is knowledgeable on the KiMI radio for agriculture extension model. His grasp of the programme model has come in handy when introducing new radio presenters to the programme ahead of KiMI's on-site training.

The most recent staff turnover reported is with Syokimau FM in Kitui. The station manager and a key presenter left the station in October 2020 to pursue other interests. It is evident that continuous training will remain a regular activity as the 'migration' of radio staff is a common occurrence across radio stations.

Women participation in the project

The number of radio station staff including producers still remains low. Additionally, hosting women agriculture experts on the show still remains a challenge as many are reluctant to travel to the station in the evening for the live shows. KiMI continues to encourage producers of the shows to record women voices earlier in the day and play them during the programmes.

Financial constraints

All the stations reported the need for KiMI to continue to financially support them to travel to the field for farmer interviews, citing lack of financial resources to do so by themselves. The Ministry of Agriculture at the County level would be best to support the radio for agriculture extension model ensuring its sustainability, but their support has been intermittent. Notwithstanding, Kitui county is a success story because the extension officer coordinating the radio programming has a senior position in the county, thus enabling him to allocate resources (such as fuel for motorbikes) and assign extension officers to the programmes.

10. Conclusion

The stations require capacity building on sustainability of the radio for agriculture programming, beyond the project's life. This is an area that KiMI will give much focus in the coming year. In response to requests from extension officers and radio staff, a major activity will be bringing together agriculture stakeholders in each county to introduce them to the importance of using and supporting the radio to reach farmers better.

It is evident that extension officers, who seem to have a more permanent tenure, play an important role in supporting new presenters joining the radio stations. KiMI intends to address the changes in Ministry of Agriculture County Officers by developing a write up that spells out the objectives, modalities and expected outcomes of the radio for agriculture extension model. This write up can be shared with the incoming Ministry of Agriculture officer by the extension officer as part of their orientation.

Kilimo Media has recorded a growing demand from radio stations that it cannot meet. Stations that have put forward their interest are from Turkana, Eldoret, Makueni, and Muranga counties. Sustainability of the Kilimo Media model of agriculture extension can be enhanced by KiMI taking the lead in charting a strategy for collaboration between radio stations and potential partners. Convening county officials for the respective radio stations can be done in order to make a case for supporting the extension model. Production teams can also be supported in developing proposals to stakeholders to engage with potential sponsors. KiMI will share programming reports with agricultural department authorities and other stakeholders on the impact of the radio extension model for possible sponsorship and support.

Appendix I
Radio stations supported by Kilimo Media International

	Radio station	County	Name of programme	Broadcast time
1	Bus Radio	Kajiado	<i>Olararmatani Odupa</i> (Livestock farmer) Refers to both livestock keeping and farming	Sunday 8.00pm
2	Thiiri FM	Meru	<i>Urimi ni Utonga</i> (There is wealth in Farming)	Friday 7.30pm
3	Syokimau FM	Kitui	<i>Nima Mbailu</i> (Smart Farming)	Wednesday 8.00pm
4	Rware FM	Nyeri	<i>Murimi Njorua</i> (Smart Farmer)	Thursday at 8.00pm,
5	Radio Jangwani	Marsabit	<i>Qommi Gabare</i> (Opportunity for farmers)	Friday 8.00pm
6	Wikwatyo FM	Kitui	Uimi (farming)	Tuesday 8.00pm
7	IBSE FM	Marsabit	<i>Qommi Gabare</i>	Saturday 8.00pm
8	BIFTU	Marsabit	<i>Qommi Gabare</i>	Saturday 8.00pm

Appendix II

Radio listening groups, trainings and number of farmers reached by the radio stations

Item	2017 to 2018	2018 to 2019	January to October 2020	The method used to track those numbers	Notes
Number of Radio listening groups	11	35	38	-Telephone calls to the groups by agriculture extension officers -Radio listening group membership list	
Total number of farmers in the listening groups (sum of all the groups)	261	3110	3,335		
Male	120	1238	1,287		
Female	143	1872	2,048		
Number of in house trainings held	2	2	2	Attendance list	
Number of participants at the in-house trainings	42	20	10		
Number of officers trained on radio for agriculture extension	34	18	45		
Estimated number of farmers reached by the radio station	No estimates were provided for this year	1,720,250	2,025,250	The 2020 number increased partly due to the incorporation of two new stations, IBSE FM in Marsabit and Wikwatyo FM in Kitui, as well increased number of farmers reached by Bus radio based in Kajiado County following the erection of a 30-meter mast.	

Appendix III

Some of the radio programmes broadcast and practices implemented after listening to the programmes

** Practices implemented are highlighted in yellow. These practices were confirmed by agricultural extension officers providing on-the ground extension support to farmers.

2017 to 2018	2018 to 2019	January to October 2020
Thiiri FM <ul style="list-style-type: none"> Rearing and marketing fish Solar irrigation Indigenous chicken rearing Fodder conservation Pig farming Sunflower farming Coffee farming Banana production Improving soil fertility Growing avocados Syokimau FM <ul style="list-style-type: none"> Pest and disease management for maize Control of army worms in maize Growing green grams Pasture conservation Post-harvest management of pulses and cereals Land preparation Radio Jangwani <ul style="list-style-type: none"> Soil and water conservation Climate smart agriculture Water harvesting Agroforestry Vegetable nursery preparation 	Thiiri FM <ul style="list-style-type: none"> Growing butternut Conservation agriculture Fish farming Cooking fish Fish preservation Growing water melons Avocado production and marketing Weather updates Syokimau FM <ul style="list-style-type: none"> Control of lumpy skin disease in cattle Water melon farming Mango production Control of mango fly Soil fertility management Manure preparation Radio Jangwani <ul style="list-style-type: none"> On farm installation of water pans Environmental conservation Food security measures Growing vegetables Early land preparation Weather updates Farming as a business 	Wikwatyo FM <ul style="list-style-type: none"> Growing pigeon peas, post-harvest management and storage Safe use of pesticides Weather advisories Farming in COVID-19 times Thiiri FM <ul style="list-style-type: none"> Rearing mud fish Preparing nursery beds Chicken rearing Farming in COVID-19 times Orange fleshed sweet potatoes Kitchen gardens Soil testing Syokimau FM <ul style="list-style-type: none"> Weather advisories Growing of vegetables such as kales and cabbages Farming in COVID-19 times Radio Jangwani, IBSE FM & BIFTU FM (vMarsabit) <ul style="list-style-type: none"> Control of fall army worm Control of desert locusts Planting, pest control, harvesting and post-harvesting of maize, beans and sorghum Farming in COVID-19 times Land preparation Growing of kales, spinach, green paper and tomatoes Bus Radio <ul style="list-style-type: none"> Beekeeping Irrigation of horticultural crops

<ul style="list-style-type: none"> • Herbicide application and disposal of containers • Management of Rift Valley fever • Land preparation <p>Bus Radio</p> <ul style="list-style-type: none"> • Bee keeping • Clean milk production • Control of Ipomea weed • Hay making • Silage making • Land preparation • Pasture production <p>Rware FM</p> <ul style="list-style-type: none"> • Soil fertility management • Climate smart agriculture • Zero grazing • Bee keeping • Goat rearing • Growing strawberries • Coffee management • Soil and water conservation • Value addition of vegetables • Group formation and benefits • Growing arrowroots • Growing Hass avocado • Fodder conservation • Record keeping 	<ul style="list-style-type: none"> • Post-harvest management of crops <p>Bus Radio</p> <ul style="list-style-type: none"> • Beekeeping • Tree planting • Rain water harvesting • Control of mastitis in cows • Marketing agricultural produce • Clean milk production • Growing Lucerne • Keeping doper sheep <p>Rware FM</p> <ul style="list-style-type: none"> • Visiting crop clinics • Growing of vegetables such as carrots, tomatoes, and kales • Bee keeping • Pig rearing • Chicken rearing • Growing sweet potatoes 	<ul style="list-style-type: none"> • Farming in COVID-19 times • Effect of COVID 19 on livestock farming • Poultry keeping • Animal feeds preparation and preservation • Milk hygiene <p>Rware FM</p> <ul style="list-style-type: none"> • Strawberry farming • Water harvesting • Growing avocados • Growing arrowroots • Farming in COVID-19 times <p>The number of staff at the station reduced due to COVID-19, reducing the number of programmes produced and aired by the station in 2020</p> <p>Wikwatyo FM</p> <ul style="list-style-type: none"> • Agro based weather advisories • Land preparation • Farm inputs • Seed selection; green grams, maize, pigeon peas • Use of pesticides and herbicides • Production of onions • Poultry keeping <p>Wikwatyo FM continued to broadcast live agriculture programmes even during COVID 19 observing health protocols. They prepared a schedule of programmes with the ministry of agriculture in Kitui county that runs till end of December 2020</p>
---	---	--